



NATIONAL
WEATHER SERVICE
FLAGSTAFF,
ARIZONA

NATIONAL
WEATHER SERVICE

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Northern Arizona Savvy Spotter

Monsoon Edition 2017

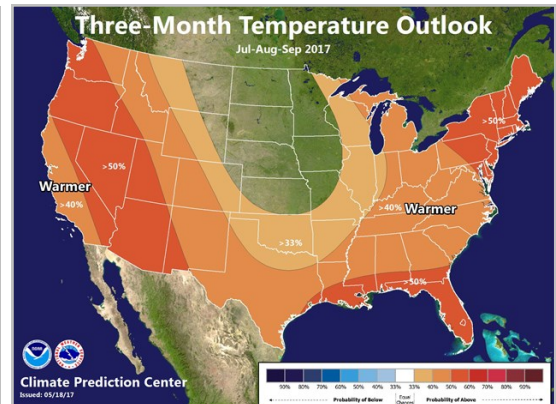
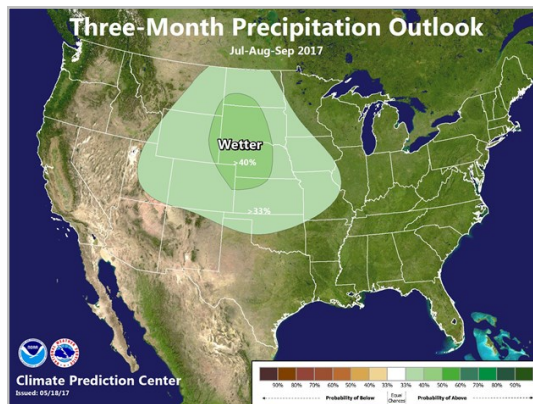
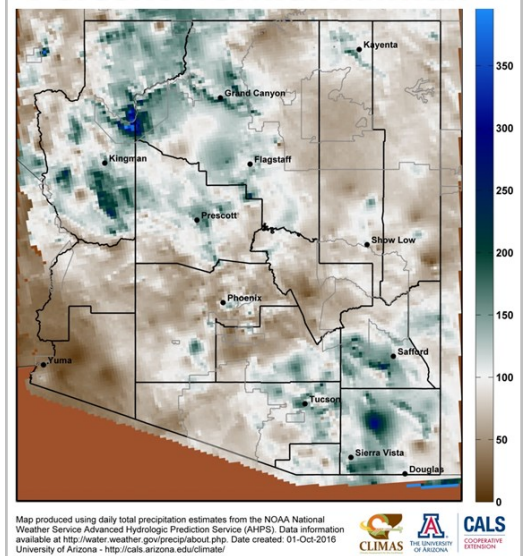
Welcome to all of our new spotters this season and greetings to our returning spotters! It's time to prepare for the upcoming monsoon season and we hope the following articles bring awareness to the weather hazards you can expect this summer. Stay safe this season and thank you in advance for your accurate and timely severe weather reports!

Monsoon 2017 Outlook

By: Justin Johndrow

Monsoon season in northern Arizona brings with it a major shift in our weather, from the warm and sunny days of June to the cooling rains and thunder of July and August. Few places in the United States experience such an abrupt shift from dry to wet weather as we do here in Arizona each summer. For example, the average chance of rain in Flagstaff on June 20th is around 5 percent. Just one month later on July 20th, it is 50 percent! Much of northern Arizona experiences similar shifts in weather patterns, with the White Mountains seeing an even more dramatic increase in rain chances. To the right is Monsoon 2016's final statistics, showing seasonal rainfall as a percent of normal. Much of Coconino and Yavapai Counties were wetter than normal, with drier conditions in much of Apache, Navajo, and Gila Counties. As far as whether this season will be wetter or drier, each year is different and can even vary over short distances from place to place.

Percent Normal Rainfall



For Monsoon 2017, NOAA's Climate Prediction Center's latest precipitation outlook shows no predictability across Arizona (just like last year, and most years for that matter). This is called an "equal chances" outlook, meaning there are equal chances for above, below, and near normal precipitation. In other words, we just don't know! There aren't enough reliable climate predictors to tilt the odds one way or the other right now. Temperatures are more predictable this year. Arizona has a greater than 50% chance of seeing above normal temperatures this summer (above normal is considered to be in the warmest third of all years).

Monsoon Awareness Week

By: Tony Merriman

Monsoon Awareness Week

June 11th—17th, 2017

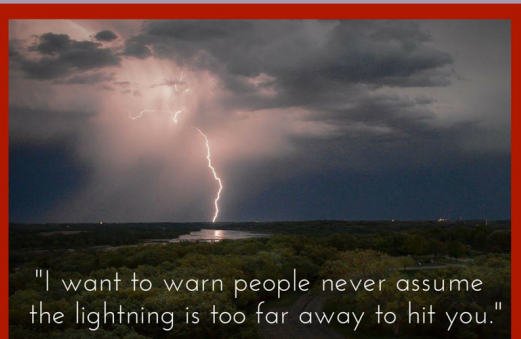


Monday June 12 – Excessive Heat

Heat is one of the leading weather related killers in the U.S. The most common places for excessive heat in northern Arizona are the lowest reaches of the Grand Canyon and lowest valleys of Yavapai County. Heat stroke is an emergency – call 911. Avoid outdoor activities in the hottest time of the day, drink plenty of water and take frequent breaks!

Tuesday June 13 – Downburst Winds

Have you ever heard of a downburst or microburst? These are strong winds that descend from a thunderstorm and can exceed speeds of 100 mph. They can be wet (associated with heavy rain) or dry (associated with very little rainfall). The early part of monsoon season is most common for downburst winds.



Charmaine, Belfair, WA

Struck while volunteering at an outdoor event

weather.gov/lightning



Wednesday June 14 – Blowing Dust

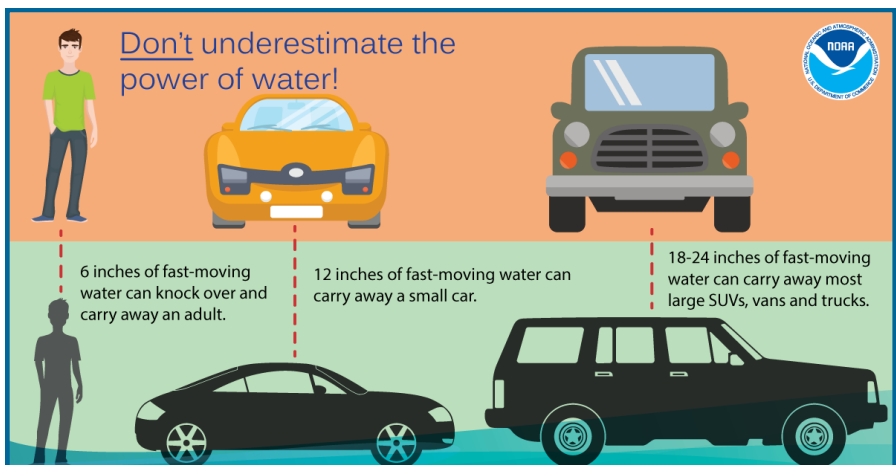
Strong thunderstorm outflow winds can cause areas of dense blowing dust. Although most common in southern Arizona, localized areas of blowing dust can affect northern Arizona too.

Thursday June 15 – Lightning

Lightning kills people in Arizona every year. It's no coincidence that over 70% of lightning deaths in the last decade occurred in June, July, and August when outdoor activities are thriving. **When thunder roars, go indoors!**

Friday June 16 – Flash Floods

Flash floods are the #1 thunderstorm related killer! Flash floods occur every year in northern Arizona. Slot canyons and wildfire scars are particularly vulnerable areas. Always check the forecast before planning outdoor activities this summer. If you encounter a flooding roadway, turn around, don't drown!



Wildfires & Flash Flooding

By: Maddie Powell

Arizona's arid climate heightens wildfire concern as the spring and summer months begin. As winter precipitation ceases and monsoon precipitation is on the horizon, forests begin to dry and fuels can become easily ignited. Wildfire season is partially dictated by the amount of winter precipitation received, as an active winter may delay the likelihood of fires in the late spring and early summer months. The opposite is true of winters that record below average precipitation.

In the case of a drier than average winter, spring wildfires ignite quickly and can be long lived as fuels are dry and readily available. These fires are more difficult to contain and extinguish, often prompting evacuations depending on their proximity to homes and businesses. Once these fires are extinguished, a new threat arises as monsoon precipitation begins. A burned forest experiences changes to soil composition and stability. Tree roots that anchor into the forest floor are damaged and natural surface litter is gone. As summer precipitation arrives over a burn scar, the soot and ash runs off and becomes a flash flooding concern.



Schultz Fire June 2010. Photo: Jeremy Perez



Post Yarnell Fire landscape. Photo: David Vonderheide



Flooding after the Schultz Fire along Highway 89 northeast of Flagstaff.

Northern Arizona locals can recall the flash flooding damage that resulted after the Schultz Fire. The Schultz Fire, the result of an abandoned campfire, burned over 15,000 acres in June of 2010. As the fire was nearing complete containment at the end of June, a particularly intense monsoon thunderstorm moved over the area in mid-July, causing significant flash flooding and damage to the homes previously in danger of the fire. One person was killed in the floods, and the damage was significant enough to prompt Coconino County to spend millions of dollars redesigning waterways to mitigate damage in the area.



Flash flooding is the primary thunderstorm related killer and burn scars are particularly vulnerable areas. Always check the forecast before venturing outdoors and never enter a flooded roadway!



Hail Reporting

By: Megan Taylor

If you're a long time northern Arizona resident, then hail is no stranger to you during the North American Monsoon season. It's a common occurrence during the summertime months. Fortunately, most of the hail we experience is small, but there are those stray storms that pulse strong enough to produce large hail. These are the events that are particularly important to report. Large hail often causes damage to vehicles, homes, and structures.

Why is it so important to report? There are actually a few reasons. The National Weather Service keeps records through our National Center for Environmental Information (<https://www.ncei.noaa.gov>) of severe weather. These reports will remain in the archives for many generations to use. In addition, these reports are how we verify our severe weather warnings. These statistics help us improve our warning services to ensure public safety. Your reports could help save lives!

Measure the diameter of the largest hail stone with a ruler and report to us via our [online report form](#) or via [Facebook](#) or [Twitter](#). Pictures are very useful, especially when the hail is compared to common objects for comparison. We always encourage *measurement*, not *estimation* of hail, but if you don't have access to a ruler you can compare to these common objects to estimate the size.



Hail isn't the only thing we're concerned about! Here's a quick reminder of other types of significant weather to report. There are many different ways to submit your report. Online or social media are the preferred methods, but we have forecast staff here 24/7 to answer any phone call reports as well. Remember to be as specific as possible with the location of the weather report (i.e. 5 miles SW of Show Low) and the time the event occurred.

What & How to Report ...

Flash flooding - flooded roads or property threatened

Hail - 1/2" or larger

Heavy Rain - 1" or more over an hr.

Wind - Damage or 58 mph or greater

Funnel Cloud or Tornado



[Online Report Page](#) (bookmark)



Phone - 1-888-745-1637



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*Improving
the nation's
resilience
against
extreme
weather,
water, and
climate
events.*

NWS Flagstaff Summer Projects

By: Maddie Powell, Megan Taylor, and Natalie Panasiak

Summer Student Volunteers

Maddie Powell is a native of Flagstaff and is volunteering with the National Weather Service in Flagstaff this summer. During her time at the NWS, she will be assisting meteorologists in identifying key emergency management partners to receive feedback on heat related products and monsoon flood messages. She will also be observing meteorologists in operations during the monsoon. She graduated from Embry Riddle Aeronautical University in May of 2017 with her B.S in Applied Meteorology and a certification in Emergency Response Meteorology. She will be attending the University of Arizona in August to begin a Master's Degree in Atmospheric Sciences.



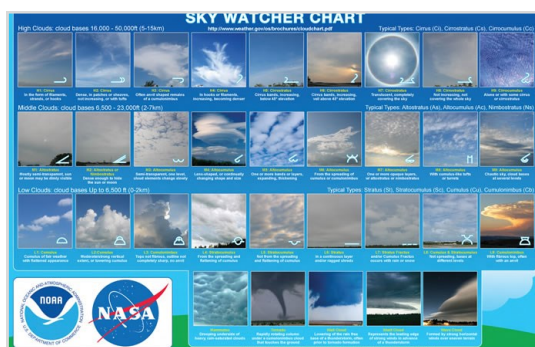
Brett Crane is a native Arizonan from the Phoenix area and just finished his junior year at NAU majoring in Geographic Science with a strong GIS background. Brett will be utilizing his GIS knowledge to find low water crossings on roads in northern Arizona that will help identify potential flood risk areas.

NOAA Hollings Scholar Program

Yá'át'ééh!



This summer, our office is hosting our first ever NOAA Hollings Scholar! As part of the NOAA Hollings Scholarship Program, North Carolina resident Natalie Panasiak is interning with us for 9 weeks to lead a project translating the National Weather Service's cloud chart into Navajo. Although Natalie is a marine biology and French major, she is thrilled to immerse herself in Navajo language and culture to create science outreach materials that will allow for culturally appropriate forecasting and warning communication to improve weather-related safety in the Navajo Nation, richer science experiences in the classroom, and preservation of one of the Southwest's most unique languages. Natalie is currently learning Navajo through the Rosetta Stone language learning software and other relevant print resources. She strives to produce a translation that takes Navajo culture into account, rather than a direct word-for-word translation. The translated cloud chart will be made available to members of the Navajo community at no cost, so keep an eye out for the finished product!



Given the relatively short time frame of the project, help in any form is greatly appreciated! If you would like to become involved in the Navajo cloud chart translation project in any capacity, please feel free to contact Natalie at natalie.panasiak@noaa.gov. More information about the Hollings Scholarship Program, which provides financial assistance and internship opportunities to college sophomores majoring in NOAA mission fields, can be found at:

<http://www.noaa.gov/office-education/hollings-scholarship>.